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50X1-HUM

EconomicDescription, Lay-out and Production of "LIAZ" Car Factories at LIBEREC

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1. History *the liberec automobile works, national Enterprise*
 - a) ~~LIBEREC~~ (Liberecké automobilové závody, n.p. - ^{LIAZ} ~~LIBEREC~~ ~~Car Works~~) was formed in 1950/51 and consists of three factories with different kinds of production: LIAZ, ~~HAVLÍČKOV~~ ^{SKODA RO}, where the complete ~~706~~ engines are made; LIAZ, ~~MYČHOVO HRADISTE~~, where bodies and chassis are made; and LIAZ ~~RYNOVICE~~, where coach work is made and complete assembly of the ~~706~~ ^{RO} bus is carried out.
 - b) Up to 1954, these three works were under one management at ~~RYNOVICE~~, but at present all three are independent.
 - c) ~~LIAZ~~, ~~RYNOVICE~~, is located in an installation built about 1943/44, where towards the end of the war optical sighting apparatus for the German army was made. After the war, production of electrical apparatus such as washing machines, electric ^{stoves} ~~fires~~, and cookers, etc., was introduced and continued until 1950, when the LIAZ national enterprise was formed. All three LIAZ factories have very good modern equipment.
2. Location of the ~~RYNOVICE~~ factory (see sketch)

~~RYNOVICE~~, where the factory is located, is about 6 km. SouthEast of ~~LIBEREC~~. The factory is on the Southwestern outskirts of ~~RYNOVICE~~, and the North-west side is bounded by the RYNOVICE - LUKASOV road; on the North-east side is the MSENŮ and Nisou - RYNOVICE road; the South-east side extends as far as the wood, and the South-west side is separated from the wood by a field. The area covered is about 350 x 300 m.
3. Production.
 - 1) RYNOVICE factory.
 - a) The complete assembly of the RO 706 bus from parts supplied from the three LIAZ works is carried out at this factory; the production capacity is three buses in 24 hours. The actual



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production rate, however, is 60% higher, for a large number of spare parts are made, bringing the rate up to sufficient parts for seven vehicles a day.

b) In addition to the large consignments of spare parts sent abroad, considerable stocks are being accumulated in Czechoslovakia; by 1954, there was already a shortage of storage space.

c) The buses are run in by employees of the factory, and no bus may be put into use before it has done 200 kilometres.

d) The RYNOVICE also makes small parts for motors and gear boxes; the latter are delivered already assembled to the HANYCHOV factory. In addition, it makes gear wheels for the RO 706 bus and R 706 [redacted] 50X1-HUM propeller shafts, half-axles, pumps, pistons and all the coach work for the RO 706 bus and the steering gear for the RO 706 and R 706. All these parts are delivered to the LIAZ works at HANYCHOV and MNICHOV HRADISTE, where they are assembled. The chassis for the RO 706

buses are then brought back to RYNOVICE, where final assembly and running in are completed, as well as the electrical installation.

e) The RO 706 has a six-cylinder 70 HP 5-speed water-cooled diesel engine, and seats 54, including the driver, with room for 15 standing passengers. It is about 10 m. long and 2 m. wide. This is the only mass-produced bus made in Czechoslovakia. KAROSA n.p., VYSOKE MYTO, has been making experimental models since 1954, and a bus with a TATRA engine mounted at the rear, for use on mountain roads and not suitable for level running, has been put into semi-serial production.

ii) LIAZ, HANYCHOV.

a) This factory makes parts for the RO 706 engine, although a number of these are made at RYNOVICE, mostly the smaller parts and screws.

b) The engines and gear boxes are assembled at HANYCHOV, and delivered to RYNOVICE after being tested for 24 hours. The production capacity is greater than 3 engines a day, since these are assembled for the R 706 [redacted] as well as for the buses, and the exact production figure [redacted] is not known, although it is [redacted] 50X1-HUM
[redacted] /greater

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greater than that for the buses.

iii) LIAZ, MNICHOVO HRADISTE

a) This factory makes the chassis and complete body for the RO 706 ^{bus} and R 706^{Truck}. The engines are sent here from HANYCHOV and assembled to the body, which is then driven under its own power to RYNOVICE, about 20 km. away. This factory also makes parts for the body and chassis.

b) The coach work for the R 706 ^{Truck} is supplied by some other works. 50X1-HUM
and only assembly and running in of the R 706 are carried out at this works. 50X1-HUM
[] has special hydraulic tipping gear and the same engine as the RO 706 bus. Production figures are, as stated, higher than those for the bus.

4. Destination of products.

a) Of the production of RO 706 buses, only an insignificant percentage is destined for home requirements, and most of it is intended for satellite states such as Poland, Albania, Hungary and for the U.S.S.R.. A large section is also destined for China.

b) The R 706 [] are supplied to all countries of the Socialist 50X1-HUM
bloc, and there have also been deliveries to the West, i.e. [] 50X1-HUM
[] South America. The orders received at the LEIPZIG Fair were so numerous that the factory had to refuse some. 50X1-HUM

5. Supplies and delivery of materials.

a) Castings for blocks and similar parts are supplied by the VITKOVICE Ironworks. Other materials, such as plates, non-ferrous metals, etc. are delivered very irregularly, and production is held up, especially in the earlier part of the month.

b) Bearings for vehicles intended for home requirements and the satellites are made in Czechoslovakia; for Western countries, bearings made in the West are used. Those made in Czechoslovakia are frequently faulty and very often break.

c) Electrical fittings are supplied by the PAL Works.

6. Shortcomings in products

a) In the first series, especially among vehicles sent abroad, the engines seized up, due to poor machining; since then, the machining has

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been improved to prevent sand and other substances from penetrating.

b) Faults have also been found in the pneumatic doors and in poor jointing of the coachwork.

c) In spite of the fact that more attention is paid to higher quality in products intended for export, faults frequently occur due to inexact and negligent work on the part of the employees, and the production of a large number of spare parts is made necessary by this lack of precision through which a large number of parts are put out of action as soon as the vehicle starts running.

7. Employees.

a) Three shifts are worked at the RYNOVICE factory, the morning and afternoon shifts fully manned and the night shift 50%. The factory employs 5,000 workers, about 30% of whom are women.

b) Export staff has been brought in from SKODA, MLADA BOLESLAV, TATRA, KOPRIVNICE and SKODA, PLZEN. Most of the workers, however, are retrained labour from other trades.

c) The average pay for men is 1,100 kcs a month, and for women about 700 Kcs; with overtime, the highest wage is 2,800 Kcs net a month.

8. Power and other supplies.

a) Since 1955, there has been a shortage of electric current, especially in the winter months; it was often switched off for two hours, in the mornings particularly, at which times work had to stop.

b) There has been no shortage of gas or water supply.

9. Machinery.

a) On the whole, the machinery at LIAZ, RYNOVICE, is up to date and good, for the equipment was installed after 1950, and new machines are constantly supplied to replace the old.

b) Mostly measuring instruments and lapping machines, for final machining of pistons, are supplied from abroad, chiefly from Eastern Germany.

c) The section known as "Bijouterie" - for small automatic lathes for machining small screws and other products - is in the poorest state.

Most of the employees in this section are women who have not been trained for the work.

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10. Personalities.

- a) Manager: Adolf CERNOCH, originally a factory hand, but has taken
a course at industrial school

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In 1957

he was to be transferred to the BRNO Zbrojovica (armaments factory)

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- b) Chief Engineer: Otto HENRYCH; has no engineering diploma;

- c) Chief Controller: BOHDAL (?)

- d) Cadre Official: Vaclav URBAN

- e) Head of technical organisation: Antonin CISAR

- f) At the end of 1955, an attempt was instituted to bring in skilled and expert staff and remove foremen and managers who had obtained their posts on political grounds; this measure affected mainly foremen, and a number who had been appointed because of their party membership were removed and persons with expert qualifications were appointed in their place regardless of political adherence.

11. Layout. (see small sketch)

The whole factory is surrounded by a wooden plank fence.

- 1) Main entrance. from the RYNOVICE - MSENŮ n/N road with porter's office in a one-storeyed building on the main road, about 25 x 18 m. and also containing the personnel department, financial section, CSM secretariat and security department.

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- 2) Surgery and offices, in a ground floor building on the other side of the entrance, about 20 x 10 m.
- 3) Technical and administration management, in a one-storeyed building 50 x 35 m. with a mechanical workshop on the ground floor where gear wheels are made, blocks machined, half-axles slotted and smaller parts for coachwork machined. The offices are on the first floor. At the North-east corner of the building there is a one-storeyed annexe 20 x 15 m, containing a telephone switchboard, a small tempering shop and a small workshop with machine tools.
- 4) Boiler-house, masonry, raised off the ground, 15 x 15 m, heating the whole factory.
- 5) Hall for rough welding of coachwork, ferro-concrete, 40 x 20 m. the work is sent from here to the upholstery section, and then returns to the paint shop, which is in this hall.
- 6) Mechanical workshops, designing offices, tool shop, in a two-storeyed building about 40 x 20 m, with mechanical workshop and tool-issuing shop on the ground floor, design and drawing offices and tool room on the first floor and technical library and workshop equipped with small semi-automatic lathes on the second floor.
- 7) Section 1, a three-storeyed ferro-concrete hall, with the most modern equipment in the factory, about 60 x 35 m. On the ground floor there are grinders, turret lathes, slotting machines, two large presses for moulding coachwork and six smaller presses, a small assembly shop for shafts and a tempering and cementing shop and checking section. On the first floor is a mechanical workshop with ordinary and turret lathes, grinders and lapping machines, Section 1 offices, and the main control office for the factory, checking section and a small welding shop. On the second floor is the tool-issuing room, a room where measuring instruments are issued, a workshop with small automatic and turret lathes, a store for material, a grinding shop for tools, and the other half-floor is occupied by the apprentices' training centre. (see separate sketches and keys for details).

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- 8) Upholstering shop, an annexe to Section 1. 20 x 10 m., where the final fitting up of the vehicles before they are run in takes place.
- 9) Despatch, a masonry ground-floor building about 35 x 15 m., also containing the works kitchen, restaurant and canteen, and a garage for the two factory vehicles.
- 10) Transport and purchasing departments, in a wooden hut, where transport of materials between the three LIAZ factories and delivery of other materials required are arranged.

12. Detailed description of Section 1. (see sketches numbered (7))

I) Ground floor

- A) Entrances
- B) Assembly of shafts made in the factory
- C) Tampering for smaller parts
- D) A row of TOS grinders for flat and round surfaces, for working on shafts, valves, valve gear etc (not marked on sketch)
- E) A row of turret lathes of home and foreign makes on which combustion chambers and other smaller parts are machined.
- F) A row of lathes of home and foreign makes for the first turning operation.
- G) Slotting machines for machining half-axles.
- H) Two rows of milling machines for rocker arms, smoothing piston heads, edges of nuts etc.
- I) Moulding shop for body work, with two large German hydraulic presses and six smaller ones, also German.
- J) Store for plates
- K) Lifts from basement to first floor

II) First floor

- A) Entrances - stairs
- B) Offices for Section 1, production control, finance, piece-work.
- C) Workshop control for Section 1
- D) Row of drills and turret lathes
- E) Row of milling machines, lathes and 2 lapping machines, these last for pistons.

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- F) Row of turret lathes
- G) grinders (centreless) for machining pistons 50X1-HUM
- H) Lifts from basement to first floor

III Second floor

- A) Entrances and stairs
- B) Small welding shop for valve rocker arms
- C) Room for issuing measuring instruments
- D) Room for issuing tools
- E) Three rows of turret lathes
- F) Row of automatic lathes known as "Bijouterie"
- G) Lifts

IV Third floor

- A) Entrance and stairs
- B) Apprentices' workshop equipped with various machines for making small parts
- C) Assembly of pumps
- D) Four rows of milling machines
- E) Two rows of lathes used for precision machining of joints, bronze casings etc.

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